Bell (A. N.) is author

EXTRACT

FROM THE

NINTH ANNUAL REPORT

OF THE

STATE BOARD OF CHARITIES

OF THE

STATE OF NEW YORK,

RELATING TO THE BEARING OF

THE SANITARY CONDITION OF TOWNS,

AND THE

CROWDING OF POPULATION INTO FILTHY, ILL-VENTILATED AND BADLY-DRAINED TENEMENT HOUSES,

UPON THE

INCREASE OF PAUPERISM.

BY

HENRY L. HOGUET,
COMMISSIONER NEW YORK COUNTY.

A. A. LOW,
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TRANSMITTED TO THE LEGISLATURE JANUARY 14, 1876.

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STATE OF NEW YORK:

OFFICE OF THE STATE BOARD OF CHARITIES,
ALBANY, *December* 29, 1875.

To the State Board of Charities:

At a meeting of the State Board of Charities, held at Albany, April 6, 1875, the following resolution was adopted:

Resolved, That a committee, consisting of Commissioners Hoguet and Low, be appointed to take into consideration the bearing of the sanitary condition of towns, and the crowding of population into filthy, ill-ventilated and badly-drained tenement houses, upon the increase of pauperism.

In the consideration of the subjects referred to in the foregoing resolution, the committee employed A. N. Bell, M. D., of New York, a gentleman of large experience in sanitary work, to aid in the matter. The report of Dr. Bell upon the subject is herewith submitted. The general scope of this report is based upon suggestions by the committee, with whom the author had frequent conferences in the course of its preparation.

All of which is respectfully submitted.

HENRY L. HOGUET,
Commissioner New York County.
A. A. LOW,
Commissioner Kings County.
} COMMITTEE.

REPORT.

To Messrs. Henry L. Hoguet and A. A. Low,
Commissioners State Board of Charities, New York:

It is almost too patent for remark, that the filthiest parts of towns are inhabited by the most unhealthy and the poorest people; that unhealthy surroundings are scarcely less potent in blunting the sensibilities and lowering the standard of morals than in diminishing the strength of the physical system, and to such a degree that even new comers, as there are always likely to be some in unhealthy neighborhoods, lose both moral and physical stamina, have their sensibilities deadened by the vitiated elements around them, and not infrequently become debased to the level of the polluted sinks and gutters amidst which they live. When once accustomed to their slums, if from any cause they are forced to leave them, they strive to regain possession or seek others like them; being apparently incapacitated for sudden changes even for the better. And, finally, when affected with mortal maladies, some are so degraded as to be like the dumb beasts, guided by instinct only, they shrink away into their dens and die, obdurate and uncomplaining. It was in recognition of these plain truths, although at the time inculcated by comparatively few individuals, that the English government in 1839 authorized inquiry into the condition of the laboring classes in both town and country, comprehending their dwellings, comparative cost and comfort, wages and expenditure, idleness and vice, surroundings and health. Stated instructions were given in regard to dwellings, to inquire as to comparative health and conditions of the inmates, and whether the advantage of improved dwellings had been observed to have any salutary influence on the moral habits of the inmates; whether the increased comforts of his house and home had tended to withdraw the laborer from the beer-shop and from the habits of improvidence, to which it leads; whether residents in separate and improved tenements are superior in condition as compared with laborers who hold merely lodgings, or who reside with other families in the same house; whether the surrounding lands are drained or not; whether there is a proper water supply for the purposes

of cleanliness of the houses, persons and clothing; whether there are good means for ventilation with due regard to warmth; whether there are proper receptacles for filth in connection with the cottages; whether such residences are unduly crowded, and several families or persons occupy the space which would properly suffice only for a less number; whether there are any inferior lodging-houses, crowded by mendicants or vagrants; whether there is gross want of cleanliness in persons or habitations of certain classes of the poor; whether there is a habit of keeping pigs, etc., in dwelling-houses, or close to doors or windows.

These are but a few of the questions covering the points of inquiry at that time instituted, which elicited the information so ably formulated by Edwin Chadwick, in 1842, in his "Report on the Sanitary Condition of the Laboring Population of Great Britain."

Following this work, there was published, in 1843, a "Supplementary Report on the Practice of Interment in Towns;" and in 1844, the "First Report of the Health of Towns' Commission on the State of Large Towns and Populous Districts," virtually a continuation of the same inquiry as the volume of 1842. And from that time to the present, many volumes, official and other, one or more every year, have been published in England elaborating the great pioneer work of Mr. Chadwick, indubitably demonstraing that the crowding of populations into filthy, ill-ventilated and badly-drained tenement houses *is* a prolific source of disease and pauperism; aye, that more than half the diseases which afflict mankind, are due to the conditions involved in the subject of this inquiry. Everywhere the crowding of populations into filthy, ill-ventilated and badly-drained tenement houses involve the conditions promotive of a high mortality, pauperism, vice and crime. In illustration, the following extract is taken from a report of a New York State Senatorial Committee in 1859: "A building containing *ninety-six apartments*, and these were inhabited when visited by *one hundred and forty-six families, numbering in all five hundred and seventy-seven persons.* Computing this aggregate of tenantry by the area of space occupied, we find an average of six persons to a room of twelve by ten feet in dimensions. Out of 76 houses examined in one district, the average number of persons occupying them was 70 to a house, or eight to a room 12 by 14 feet square. In one block of a series of buildings visited, 200 families, averaging five persons to a family, were confined without ventilation, proper light, or convenience for obtaining water. In another building examined, 85 apartments contained 310 persons, and all the rooms were not rented. If such aggregations of human life and filth, vermin, disease and destitution may not be termed 'laboratories of poison,' there is no fitting term whereby to designate them.

"Hundreds of the miserable occupants of these establishments dwell in cellars over five feet below the street level. In many parts of the city, on sunken lands, and where the sewerage is incomplete, these underground rooms are sometimes submerged by the drainage of the rains. In some this annoyance is constant, and the bricks or wooden floors are constantly oozing with moldy damp. Constant rheumatic affections, hip complaints, and affections of the bowels, are prevalent among the occupants. Instances have been known of the confinement of females on beds raised by a few bricks from the waters which flooded the floor beneath. Is it surprising that thousands of children die at the earliest period in such wretched holes and burrowing places? The quantity of air consumed by the lungs of a human adult in a minute is a half a cubic foot. At least a dozen times this amount is required at the same time, to permeate the system, after performing which function it becomes corrupt and is emitted in the form of carbonic acid gas, a poison. How long will it require for five or six persons, in a room 12 feet square, to consume all the vitality of the air within it supposing that vital air had ever entered such a place? Not more than half an hour. And all the air breathed after that time by the five or six persons, while they remain in the room with the doors closed, and without ventilation, would be what they had previously exhaled; in other words, they would breath poisoned air over and over again. Apply this computation to a tenant house containing from 200 to 1,000 persons, with exhalations from sinks, decaying matter and diseased bodies all around; the whole hemmed in by high walls of a narrow court in a sultry summer day, and can we wonder if typhus or yellow-fevers, cholera or small-pox, should visit the laboratory in search of ammunition?"

About the time of the report from which this extract is taken, earnestly commenced in New York, the same kind of voluntary work, which, in England, 25 years before, led to the enactment of laws for the protection of human health. A Citizens' Association was formed, under the auspices of which a "Council of Hygiene" sought out and published the localizing causes of diseases throughout the city. "In view of the fearful indifference to some of the prevalent and yet most preventable evils that characterize the plans of construction and interior arrangements of tenant houses, particularly as regards the gross herding of families, the obstruction of ventilation and natural lighting, the crowding of areas, etc., the council has introduced various examples from accurate surveys that have been made under its own direction, and verified by the sanitary inspectors of the districts in which examples are found." * This report is so accessible that it is not deemed

* Sanitary Condition of New York. Report of Council of Hygene; Citizens' Association. 1865, p. lxxx.

necessary to quote from it to any extent; it will suffice to state, that it is the most complete report on the unsanitary condition of New York that has ever been published, and that most of the preventable causes of disease in New York so graphically described in that volume ten years ago, still obtain, and most prominently of all the tenement-house system than which, surely, there is not a more disgraceful blur on the civilization of the nineteenth century.

True, there have been some improvements in recent structures since the exposures above referred to; some of them have increased facilities of water supply, and are better cleaned and lighted, and, withal, are more frequently *inspected* by the officers of the health department, but how to crowd the largest number of persons into the smallest space with the least pecuniary outlay, is still the pervading idea of the tenement-house landlord; health seems never to be a subject worthy of his consideration. *Want of space* is still a prevailing evil, and no matter how well arranged the structure may be, so long as over-crowding is practiced, consequences will continue, at which all the better feelings of human nature revolt, and which might, with propriety, be passed over in silence were it not the best way to correct abuses to make ourselves acquainted with the results.

It is still a common thing in New York tenement houses to find families of six or eight, or even more persons, all crowded into one room of dimensions too small for one-fourth of the number, and with but one bed; father, mother, grown-up sons and daughters, and young children, all huddled together. Order, delicacy, decency, chastity—all overwhelmed by squalor. Pure air is impossible in such places, and that which pervades instead is a sickening, devitalized narcotic—air surcharged with carbonic acid and organic exhalations. Drunk with impurity, the fell destroyer, disease, in its most loathsome aspects, here runs riot and moral uncleanness is its only competitor. Hand in hand they pursue their course; poverty, disease, vice and some of the most abhorent crimes, are here borne and matured.

The motley population of the worst of these dens of death are criminals in ambush, apparently occupied with various industries, but for the most part these occupations are mere blinds; their chief means of support are prostitution and plunder.

Lest it should be thought that these conditions are things of the past, that the tenement houses of New York *used* to be as above described attention is invited to the following data from the last report of the board of health, for the year ending April 30, 1874. By the census of 1870, the population of New York was 942,292; of this number 111,205, or 11.8 per cent were of children under five years of age; of families, there were 185,989; dwellings 64,944, giving an average of 14.72 persons to each dwelling. The sanitary survey which was com-

pleted at the beginning of 1870, found 113,402 families residing in 14,494 houses, of which only 11,964 front upon streets; that is 1,440 were, and still are rear buildings. Within these 14,494 limited dwelling places there were enumerated 463,392, or about one-half of the total number of inhabitants, on an average of 31.26 to each house, and that *half of the population of the city was residing upon an area so crowded that less than seven square yards of ground area was alloted to each tenement house occupant.*

The death-rate in the city of New York has for several years ranged from 27 to 33 per 1,000 inhabitants. The mean ratio for 1867, 1868 and 1869 was 29. The total number of deaths for the year ending April 30, 1874, was 29,084; 29.84 per 1,000 on an estimated population of 1,000,000.

The whole number of tenement houses in New York in which deaths occurred in 1873 (in houses containing four or more families) was 8,856; the number of deaths in these was 14,109.

This record shows that 64.84 per cent of the total mortality in the city in 1873 occurred in this class of dwellings. The whole population being about equally divided, one-half residing in tenement houses (including public institutions, in as much as patients who die in public institutions are chiefly residents of the tenement houses) the mortality in this division for the last six years has been:

	1868	1869	1870	1871	1872	1873
Deaths in tenement houses and public institutions.....	18,864	17,350	17,997	17,993	21,550	18,864
Per centage to total mortality..	75.79	68.94	66.22	66.48	66.00	64.86

These results are in reality less than the actual, because numerous tenement houses in which deaths occur are not certified to as such. But, taking the figures as they stand they show that of the half of the population living in tenement houses in 1873, there were 18,864 deaths, a death rate equal to 37.72 per 1,000 of the living. Of the other half, not living in tenement houses, there were 10,220 deaths, a death rate of 20.44 per 1,000; showing that, for the last year of complete data, the excess of mortality attributable to the conditions of tenement-house occupancy was 8,640.

Of infant life in New York according to the census of 1870, 111,205 or 11.8 per cent of the total population was of children under five years of age.

The number of infants enumerated in the city at each successive census shows that the child population under five years of age is 118 per 1,000 of the inhabitants, only *one* per 1,000 less than that of the entire State, and considerably more than that of several other American cities and States. In Maine, Massachusetts and Rhode Island, the ratio is less than 108 per 1,000. In London it is 129. But of this large ratio of child population in the city of New York, about one-ninth of the total number of the inhabitants, 80 per cent of them are found in the tenements of the poor, and of these in some of the worse districts scarcely half survive to their second birth-day. In these places multitudes of infants are brought into the world by feeble and diseased parents, apparently for no other purpose but to speedily sicken and die; but still many puny ones survive, and the more children in such places the more orphans and paupers.

(The birth rate to population is 35 per 1,000, so far as ascertainable. "The registration of births in this city still continues to be unsatisfactory.") Of the total mortality of this city about one-half is of children under five years of age, and the death rate to the total number of children exceeds 100 per 1,000; 8,678 perish before they reach their first birthday, and of these infants under one year old (there being estimated about 26,700) the ratio of mortality is 325 per 1,000.

Accustomed as we are to look back upon the practices of the uncivilized aborigines of America, as we read of their cruelties to helpless infants and the aged, we are sometimes almost persuaded that familiarity with their barbarities has blunted our own sensibilities, that we have become purblind to the crimes of infanticide, at least, if not in the same way, in ways no less cruel or criminal, and to a degree far exceeding any of which history gives an account among highly civilized people.

The more closely unsanitary conditions are examined the more extensive do their ramifications appear; average short life is but a very small part of the evil. To whatever extent the duration of life is diminished, so much more productive power is lost, and every community is poor and powerless in the inverse ratio to the average duration of human life. Every death under the age of twelve years carries with it a positive loss to the community in which the individual has lived, because prevoius to twelve years of age sustenance involves cost—a direct outlay—and if the life of the individual is preserved a productive member of society is added and remuneration rendered. If the probabilities of life in any community are so low as to make the average adult age young, the proportion of widowhood and orphanage

is increased, and the productive members of society proportionately burdened. If a husband dies in the early years of his married life, he leaves as burdens on the community a widow or children, whom, in all probability, if he had lived, he would have supported. And thus it is that burdens are created and costs entailed upon the industrious survivors of every community in direct ratio with a high mortality. Besides, a high mortality always involves a large sickness rate, and sickness is always costly.

The average ratio of sickness to death in healthy communities, taking all ages, is about 28 to one. In other words, for every death that occurs in the community, there are, on an average 28 persons sick. Among the lower classes in city populations, where good health is an exception, the ratio of those actually laid up is considerably larger; the ratio of the sick to the well being often as high as one-third. "In two contiguous houses fronting on Pearl street, New York, it was found that among 74 families, numbering 349 persons, of the ordinary laboring class, there were, upon the day of the inspection 115 persons sick and diseased with various maladies; and, further, that the death rate of the preceding 12 months had reached the fearful maximum of one in 19 of the total population. But, it will be observed that while the death-rate was so alarming, the constant sickness rate was even more excessive; nearly one-third of the population of the two houses being sick on the day of inspection, which was during the healthiest period of the year."* Sanitary statistics generally show that a high mortality indicates a proportionately low vitality, a correspondingly large sickness rate. And in all communities where there is a large infant mortality reducing the average duration of life, the circumstance may be accepted as evidence of unsanitary conditions.

Of the number of children constantly sick, and the average duration and cost of the sickness which results in such a mortality as occurs in New York, it would be difficult to determine. But it may be safely assumed that the actual pecuniary cost of the sickness and death of 15,000 children under five years of age—half of the total mortality (exclusive of the cost of recoverable sickness among the remainder) could scarcely be less than $100 each. And of the lives wasted by preventable sickness in children between the ages of five and 12 years, it would be safe to assume an average cost of at least four times as much, or $400 each. The value of adult life at its best period is variously estimated by different statisticians at from $1,000 to $1,800 per head.

The pecuniary loss to the community and the State by preventable sickness and death, as applied to adults, depends somewhat upon the

* Sanitary Condition of New York, Citizens' Association, p. xlii, 1865.

nature of the disease, that is to say, certain diseases are most likely to occur within certain ages, and the most fatal of these are precisely those which are due to the causes comprehended in the scope of our inquiry, and most likely to occur at that very period of life which is the most valuable to the family, the community and the State.

From an analysis of a large number of cases, Dr. Southwood Smith, in his evidence before the English "Commission on Large Towns," states:

"It appears that during the year 1825 there were attacked with fever, under 20 years of age 109; between 20 and 40 years of age, 443; and between 40 and 60 years of age, 31. Further, it appears that in the five years from 10 to 15, the number attacked was 67; but in the five years from 15 to 20 they increased to 172; in the succeeding five years, from 25 to 30, they sunk to 81; in the succeeding five years, from 30 to 35, they still further diminished to 29; and in the five years from 35 to 40, they were only 28. In like manner, during the year 1826, the number attacked under 20 years of age, was 114; but between 20 and 40 years of age, the number was 498, while between 40 and 60 years of age, the number was only 53. The results during the years 1827 and 1828 were perfectly similar. Taking the four years together the total number attacked was 2,537; of these the number attacked under 20 years of age 429; between 20 and 30 years of age the number was 1,188; between 30 and 40 years of age the number was 531; and between 40 and 80 years of age, the number was 389; whence it follows that of the total number attacked, those between 20 and 30 years of age, nearly equal the number attacked at all other ages put together, the number between 20 and 30 being 1,188, and at all other ages only 1,349. In the circulars sent by the poor-law commissioners to the medical officers of the 20 metropolitan unions in the year 1839, I requested that a column might be made for the ages of those attacked with fever, with a view of testing the correctness of the data on which the preceding table was founded by a still larger observation, and the returns obtained afforded analogous results. Two consequences follow of the highest interest and importance. First, it is clear from these tables that the period of human existence during which fever can alone be said to be prevalent is from the age of 20 to 40, that is, the period of maturity, the most precious portion of the term of existence, that during which the individual is best fitted for all the duties and enjoyments of life, during which he is capable of most promoting the happiness of others, and of securing and appreciating his own. But of this period that portion which is incomparably the most subject to the ravages of this malady is the earliest portion. Now it must be borne in mind that the poorer classes usually marry and have families at earlier ages than the middle and higher, the great majority, at least of the women, being married at twenty. Of course

it is during the succeeding ten years that they have families, often very numerous ones to support; but we have just seen that this is precisely the ten years in which fever is so prevalent as to furnish, in this comparatively short space of time, nearly as many cases as all the other periods of life put together. It follows that not only the heads of families are more subject to the ravages of fever than any other class of persons, but that these persons are peculiarly liable to be attacked precisely at the period of life when they have the greatest number of young children entirely dependent on their daily labor for support.

"This is deserving of consideration viewing the subject merely with reference to the pressure on the poor-rates; but viewing it in its larger relation to the well-being of the humbler classes, it appears to me to deserve great attention."

On this and similar reports from a number of "Unions," Mr. Chadwick in his general sanitary report, remarks: "This premature widowhood and orphanage is the source of the most painful descriptions of pauperism, the most difficult to deal with; it is the source of a constant influx of the independent into the pauperized and permanently dependent classes. The widow, where there are children, generally remains a permanent charge; remarriages amongst those who have children are very rare. By the time the children are fit for labor and cease to require the parent's attention, the mothers frequently become unfit for earning their own livelihood, or habituated to dependence, and without care to emerge from it. Even when the children are, by good training and education, fitted for productive industry, when they marry, the early familiarity with the parochial relief makes them improvident, and they fall back upon the poor's-rates on the lying-in of their wives, on their sickness, and for aid on every emergency. In every district the poor's rolls form the pedigrees of generations of families thus pauperized."

Of the deaths registered in New York for the last year there were from fevers, consumption and other respiratory diseases, scrofulous diseases, rheumatism and intemperance, upwards of ten thousand; diseases to which adults from 20 to 35 years of age are the most liable, and overcrowding, filth, want of ventilation and defective drainage peculiarly predisposing. At any rate, for any excess in this enumeration of others than adults, it is fully compensated for by the number of deaths in prime adult age from dysentery and other diseases of the zymotic class no less due to the same causes, not included in the category of these 10,000 deaths, approximately due to tenement-house conditions. The cost to the city by the loss of these lives, and the sickness incident to them may be safely estimated at a million of dollars; and there was a sickness roll of at least 28 times as many as there were of deaths, costing many thousands more. The average of sickness ordinarily, as stated by M. Villerme, from

an analysis of the statistics of the Highland Society of Scotland, is that under twenty-one years of age the mean annual duration of diseases may be estimated at three days, and under seventy years of age at about sixteen weeks. * But Ansell, Neison and other authorities regard this estimate as being too low. †

The annual amount of sickness to each person expressed in weeks, as given by these authorities, is as follows:

AGE.	Villerme, Highland Society.	Ansell.	Neison, Average of rural towns and city districts in England.
Twenty	.575	.776	.840
Thirty	.621	.861	.911
Forty	.758	1.111	1.181
Fifty	1.361	1.701	1.960
Sixty	2.346	3.292	4.166
Seventy	10.701	11.793	14.039

More recently, the celebrated professor of hygiene in the university of Munich, Dr. Max von Pettenkofer, has given his attention to the subject, and remarks as follows:

"As the value of our lives depends on what we accomplish, and this is measured by our ability to work, the value of health to each individual must be apparent; and here I may remark that each individual derives advantage, not alone from his own health, but he often, and to a much greater extent, profits from the health of others. What I mean is fully expressed in the simple Christian maxim, thou shalt love thy neighbor as thyself. But it may not be superfluous to remark that the religious precept is grounded in a fixed principle of our nature; and that a city, a community, performs not only an act of humanity when it provides institutions for the healing of the sick, and means for preserving and improving the health of its citizens, but at the same time it creates a capital that in time yields a rich return.

Mere chance will not explain the fact that, in the history of human civilization, it has always been unmistakably those nations that have shown the greatest care for the health of their citizens that have exerted the most useful and the most powerful influence in the world.

* Annales d'Hygiene. 1830.

† Manuel of Health for Ireland, Grimshaw, Furlong and Moore. 1875.

It is an invariable characteristic of all cultivated nations that, with a full consciousness of their value, they struggle to introduce regulations to maintain and to improve the health of all their citizens, and that they do not, like the beast of the field, care only for themselves, or at most provide for a short time for the wants of their young. We can, without hesitation, take the interest manifested by a people in sanitary and hygienic regulations as an indication, everywhere, of the amount of influence they exert among civilized nations, and as an indication also of the number of healthy, active minds working among them.

What the Romans did to preserve the cleanliness of their dwelling places, and to supply them with pure and running water, excites, even at the present day, our unfeigned astonishment, when we examine even the ruins that are left wherever Rome held power.

Amongst us, many think themselves clean if they daily wash their hands and faces; in ancient Rome, even the poorest took a full bath daily. The Roman king, Tarquin the Elder, who ruled 616 years before the Christian era, not only surrounded the city with solid walls, as a defense against external foes, and erected numerous temples, but at the same time he constructed, as a protection against an internal enemy — against uncleanliness — the first great sewer the Cloaca Maxima, through which the filth of Rome was to be swept into the Tiber. The ruins of this and of many other great hygienic structures are still to be met with in and about Rome.

Vitruvius tells us that the city of Salapa stood orignally in an unhealthy location, so that the inhabitants suffered much from fevers. This induced them to abandon the city and to remove to another location, at a distance of four Roman miles, after Hostilius had thoroughly drained the place selected for the new city.

"I believe it will not be necessary for me to prove to you that in the peaceful struggle for existence, health has no less value, relatively, than in those fiercer contests in which soldiers fight for victory. To comprehend this fully we need some measure by which we may be enabled to estimate the relative value of health to a large community, to a city like Munich, and, if this comparison can be made in figures, it will be the more easily understood. I believe we can scarcely find any means of presenting this matter in a clearer light than by inquiring into the *time* during which our different avocations or business engagements are interrupted by sickness. Rascher, in his celebrated work on the principles of national economy, states that the value of time is most fully appreciated amongst cultivated nations, as it is by the most intelligent individuals. The maxim, "time is money," recalls to mind a renowned philosopher, and very practical mind, the celebrated Benjamin Franklin; and an English proverb tells us that time is the stuff that life is made of; and long ago old Pirkheimer

said that Celtes thought he found in the excellent quality of Nurnburg watches the reason why all the inhabitants of that city, even the richest, seemed so anxious to economize time. Rascher adds, that, in the markets of Central Asia nothing causes more surprise to Europeans than the little value set on time by the trades people of India and Bucharia, who seem perfectly happy if, after the most ruinous delay, they obtain a trifling advance on the price of their wares — a sure indication he thinks of their want of mercantile tact.

"The consequences following the loss of time are much the same in an economical point of view, whatever may be its cause; idleness may be from choice or from dire necessity. Sickness is, at best, a forced idleness, and this is probably the reason why lazy people so generally pretend to be sick. When a workman keeps his 'blue Monday,' and, instead of working or attending to his usual duties, sits all day in the tavern or ale-house; if he returns to work on the following day, he stretches and yawns and does little or nothing, and people do not wonder that he is soon reduced to poverty, and gradually sinks into the condition of a worthless vagabond, and finally becomes a burden on the community; but sickness forces many to keep 'blue Monday,' who, instead of going voluntarily to the beer saloon, are sent to the hospital. Then, when the patient returns from the hospital, he, too, may indulge in stretching and yawning, but not from the effects of beer, nor of a drunken spree, but from sickness and exhaustion. These poor men, in so far as regards their ability to earn the means of living, are as helpless as the drunkard and the vagabond; the difference is, that they are idle, not from their fault, but from their misfortune. At how high a value, then, shall we estimate the loss resulting from sickness? This question is complicated and difficult to solve. It is a very different thing if it be the father of a family, or a little child that spends a day sick; for it is not alone the loss of time, but the cost that sickness entails — the expense of medical attendance and of medicines, and the greater care that they require. Is it not an old experience that sickly children require a greater outlay of money, need more care, and cause more anxiety than those that are healthy; and, indeed, the expense they cause would often be sufficient to support a healthy adult? Yes, sickness in families not only costs more money, causes more loss of time, more care and attention, but it cripples the industry of the household through sorrow, grief and mental suffering.

"Taken all in all, we may estimate the loss for each sick person, from actual outlay, loss of time, and nursing, at the present rate of living, to average not less than one gulden * a day. That is certainly not too high a sum when we remember that even our public hospitals, which are founded on the principles of charity, and which receive barely enough to support them, expend from 42 to 48 kreutzers † a

* Forty cents.

† Kreutzer — two-thirds of a cent.

day as the smallest amount necessary for the maintenance of each patient; and this sum, in consequence of changes now going on, must soon be greatly increased. And even at this price it frequently happens that each individual is obliged to pay for extra services if he needs them. A good workman, who earns two florins* a day when in health, must expend 42 kreutzers a day while he is sick, and earns nothing; even allowing for his necessary expenses during health, it is evident that during sickness he loses more than the two florins, and after recovery he must, by increased industry, replace the amount thus lost if he wishes to regain his former financial condition. One gulden a day, then, for loss and expense, to each sick person, is the minimum that we can assume, in the opinion of those best informed in such matters.

"That sickness is a taxable object is fully recognized by laws punishing injury to our bodies, or damage caused to our health by others. The law fully recognizes the principle that the injured can derive no benefit therefrom; that he has suffered in body or in health, and that the person inflicting the injury, whether it be done intentionally or through neglect, is responsible at least for the full amount of loss the injured may sustain, and is compelled to pay a fine corresponding to this amount. Indeed, according to circumstances, the loss sustained may be very variable; but one gulden a day would not, by a court of justice, be considered an unreasonable indemnity. The same principle is found in the law defining the responsibility of directors and managers of railroads, mines, factories and the like, and compelling them to indemnify all that may be injured through their neglect.

"However, if a person becomes sick through his own fault, or is accidentally injured, he of course receives no compensation or indemnity; but his misfortune is no less than in the case in which another can be made responsible, and he is now obliged to bear the burden entirely himself. Suppose that every case of sickness occurring in the city of Munich in the course of the year to be caused by the city, and that fine and penalty were inflicted by the court, as in all such cases, it would scarcely be possible to find a court of justice large enough to accommodate the litigants, and if judgment were given against the city in every case, the taxes would be heavy and burdensome on those fortunate enough to enjoy good health.

"Amongst us, one would be laughed at if he should attempt to introduce a law to make the community responsible and answerable in damages for injury to the health of its members, and of strangers living amongst them; but in England, where they are far more advanced in sanitary affairs than we are, the public sentiment is entirely different. It has been asserted there, on high authority, that water

* The same as a gulden; 40 cents.

commissioners and owners of property should be held responsible for all injuries that might happen to individuals through their neglect of duty, and that the law should compel them to satisfy the claim for indemnity by fine, just as in accidents on railroads.

"The next question is, how many days, on an average, is each person in the community sick during the year? On this subject we have pretty accurate data on which to form an estimate. There are many fortunate enough to be entirely exempt from sickness during the year, while others may be sick many weeks, and even months. Statisticians have computed that every individual is sick from 19 to 20 days out of the 365 in the year; that is, he is sick about five per cent of his time. In round numbers, we have 20 days as the tax that sickness levies on mankind during the year.

"Could we lessen this burden on the community as we do taxes, assessments, and other public levies, we would remove a great deal of misery and suffering.

"There can be no doubt that one of the most important, and one of the most interesting problems of the present day, for medical science, and more most especially for all engaged in sanitary and hygienic studies, is the best means to reduce this tax that sickness is levying on us, and which we are likely to entail on posterity, unless we seek, by some means to make it less oppressive.

"If we assume the number of inhabitants in Munich to be 170,000, and allow 20 days' sickness for each person in the course of the year, there will be, in all, 3,400,000 sickness days in the whole city, and suppose one florin a day to be the amount expended by each person, then sickness will cause an annual loss to the city of 3,400,000 gulden. Such a sum, when first presented to us, excites our unfeigned astonishment, and we are inclined to believe that there must be an error in it somewhere. Let us examine it. This number is made up of three others; the expense of each day's sickness, the number of sickness days in the year, and the number of inhabitants in Munich; then, the error, if any must be in some one or more of these three factors. The last, the number of inhabitants in Munich, no one will dispute, the first number, the actual cost of sickness and other incidental expenses, seems to me, as it does to others, the minimum; but, suppose I am in error, and that this sum is 100 per cent too great, let us then take, instead of one gulden, only half of that amount, a sum which no one who takes the average for all conditions of society, from the highest to the lowest, can dispute, and we have an annual loss of 1,700,000 gulden.

"In regard to the second number, the yearly average of sickness days for each person, there is nothing to be changed. I believe the number is too small, rather than too large. There are certain classes of the people among whom the average number of sickness days in the course

of the year can be very accurately determined. In the Prussian army, from 1846 to 1863, a period of 18 years, each soldier on duty, was sick 16.38 days in the year. It will be remembered that only the healthiest members of the community are enrolled in the army, and these at the period of life when each enjoys the greatest immunity from sickness, and that among these, every one was sick more than 16 days in the year, the average of 20 days for a whole community, comprising men and women, children and the aged, is certainly not too great. We know from clinical experience, and from the reports of charity cases, that after 60 years of age, every workman is sick about 40 days in the year. I cannot avoid the conclusion, that in the city of Munich, millions of guldens are spent annually for sickness, and that much of it is needlessly spent.

"We cannot censure any one if we find him astonished at the magnitude of the sum spent annually for sickness; but on closer reflection, he will, no doubt, admit the correctness of the number of inhabitants in Munich. It may be, too, that he will not consider the sum of one gulden an unreasonable amount to meet damage, outlay and loss consequent on each day's sickness, yet, he doubts the correctness of the 20 days given as the number of sickness days in the year, and generally accepted by statisticians; he fears that this number may be too great, or, perhaps drawn from exaggerated cases. I must admit that I have, myself, some difficulty in accepting the proposition. I have, therefore, taken the trouble to prove the truth of the calculation in another way, which is entirely independent of the former, and may be considered a proof of that result. For this purpose, in order to determine the number of cases of sickness, and also the number of sickness days in Munich, I have followed the course pursued by Dr. Webmer to determine the sickness and mortality in the city of Munich. His method, it is true, has led to a result that is less than the reality; however, this is a result over which we should all rejoice if it could be verified; having ascertained the number of sickness cases, and the duration of each case, we can determine the number of sickness days.

"We learn from the 'Medical Topography and Ethnography of Munich,' by Dr. Webmer, a book which deserves to be more extensively known in Munich than it is, how many persons have been treated for different diseases in all the hospitals and public institutions during a series of years, and how many of these died; in other words, we know the numerical relation between the cases of sickness, and the deaths in these institutions. Besides this method gives us the means to determine about how many days each person was sick, before he was removed from the institution, by recovery or death. From these researches we learn that on an average, extending over a long series of years of every

34 cases of sickness one died, and each patient was sick about 18.5 days.

"It now remains to apply the numerical ratio thus obtained between the deaths and the sickness cases, to the whole city. It is true that in the city we do not know how many were sick; but the other number — the deaths — we can determine as accurately for the whole city as for the hospitals and public institutions. We may take the whole number of deaths in the city, and ask how many sickness cases does that represent, assuming that there are 34 cases of sickness to each death, as was found in the hospitals? Indeed there must necessarily be more cases of sickness to each death in the whole city than in the hospitals and public institutions which are generally filled with working people and the aged, who often enter too late to be benefited by treatment but we will make no account of this, for, by underating them, we will be sure to get the minimum for the sickness cases.

"On an average during the last ten years, there died in Munich each year 33 out of every 1,000 people, and this, for 170,000 inhabitants, makes 5,610 deaths in the year. If we have, as in the public institutions and hospitals, 34 cases of sickness for every death, we find 180, 740 cases of sickness in the year, which is about 500 cases a day, a number which is certainly not too high, for we do not doubt that there are often as many in the hospitals alone, within the city. Let us further assume that each case of sickness, occurring among the whole population of the city will continue 18.5 days, which is the average for the hospitals, and we obtain 3,343,000 sickness days for the whole city during the year, a number which corresponds to a remarkable degree with 3,400,000 the number previously found, and leads us to conclude that each person in the community is sick on an average, 20 days out of every 365 in the year."*

Conclusions from the data now given, applied to New York, may be summed up as follows: The population of New York is divided about equally into two classes, those who are for the most part crowded into tenement houses, and those who are not. The total mortality of the city for the year ending April 30, 1874, was 29,084. Of this number 64.84 per cent, with a death rate of 37.72 per 1,000 was among the tenement-house class; 35.16 per cent, with a death rate of 20.44 per 1,000 among the other half, those not subject to the tenement-house conditions; showing an excess of the total mortality, or 8,725 deaths as a result of overcrowding. Half of these deaths occurred among infants and children under twelve years of age, and, making due allowance for the cost of the sickness incident to them, did not probably cost less than, say $500,000.

* The value of Health to a City. By Dr. Max Von Pettenkofer. Translated by T. P. Corbally, M. D. — *The Sanitarian*, vol. 3, p. 248.

The other half, adults, valued at the lowest estimate, involved a loss to the community and the State, of not less than $2,362,000. To these sums may be added the cost of the excess in the sickness-roll, represented by the 8,684 deaths chargeable to the tenement houses.

The average police force of New York for ten years, 2,384, may be taken as an approximate standard of the best conditions of health. Of this number there were 261 deaths, an annual death-rate of 11.05 per 1,000. The average number constantly sick was 27.17 per 1,000, and the total number of days sickness to the whole force per year, 9,917. Measured by the same ratio the total population of New York for the year ending April 30, 1874, estimated at 1,000,000, with an annual death rate of 29.84 per 1,000 had a sickness roll of 73.37 per 1,000. The non-tenement house half of the population, with a death-rate of 20.44 per 1,000, had a sickness roll of 50.25 per 1,000, and the tenement-house half, with a mortality of 37.72 per 1,000, had a sickness roll of 92.74 per 1,000. The excess of mortality 8,684, due to tenement houses, being 17.28 per 1,000, gives a sickness rate of 42.48 per 1,000 on 500,000 of the population—or 21,240 persons constantly sick. This number, multiplied by the days in the year, gives the number of days sickness due to tenement houses 7,752,600. At 40 cents per day the estimate for Munich, though the cost in New York is probably twice as great, amounts to $3,101,040. To sum up:

Children killed, cost	$500,000
Adults, killed, value lost	2,362,000
Sickness excess (due to tenement houses)	3,101,040
Expense of funerals, at least $10 each	86,840
Approximate annual loss	$6,049,880

as the cost of premature deaths, lives lost, sickness and funeral expenses chargeable against tenement houses.

To fully appreciate the bearing of this cost on the increase of pauperism it must be borne in mind that it at first falls upon those who are the least able to meet it, the occupants of the tenement houses themselves. The poor mechanic or laborer, whose daily earnings are barely sufficient to pay the weekly stipend for his inadequate quarters, and provide daily food for his family, stricken with disease, has, of necessity, to become an inmate of a public institution; and his family for the time, at least, dependent upon charity.

It is by such means, however beneficent in their intention, that pauperism is invited and has its beginning. Temporary dependence upon public bounty, though necessary at the first, speedily becomes a sole reliance. It has already been shown that the deaths in public institu-

tions are so uniformly of the occupants of tenement houses that they are charged with them. With equal uniformity may the inmates of alms-houses and the recipients of charity generally be assigned to the same domiciles.

And of crime, the congener of filth? It is the nature of man to be influenced by the physical conditions which encompass him. Whether pursuing business or pleasure, whether in affluence or poverty, man's nature is reciprocal. He cannot, if he would, long resist the influence of his surroundings. The general effect of conditions, such as have herein been described, are manifest to the most superficial observers. Most persons in New York, at any rate, are painfully familiar with the impaired physical aspect of tenement-house residents. But painful as these conditions are, people do not usually reflect upon them in their more extended relations; they do not contemplate the danger of, and the frightful havoc which would be caused by cholera or other epidemics to which the tenement-house conditions ever hold the city liable. Above all, they neglect the still more appalling moral aspect of tenement houses. That of people dwelling in an atmosphere reeking with filth, with none of the decencies or conveniences of dwellings fit for human beings to occupy, separated from every thing that is calculated to elevate the thoughts, it is indeed, in no way surprising that the worst instincts imaginable gain the ascendency and run riot, that they gloat themselves on intemperance, vice and crime.

Dependence on charity, begging and thievery, are but steps in the progress of depravity. And everywhere those who fall into these practices sooner or later lose self-respect, cease to have respect for others, and, at last, abandon themselves to the most wicked propensities.

Mr. Chadwick, in his first report, gives the following striking picture of these dangerous classes as they existed in Paris 40 years ago:

"The general practice in that metropolis is to cast all the rubbish of the house into the street on the over night, or before 7 o'clock in the morning, when men, attended with carts, sweep it up and remove it. In the night-time, however, the chiffonnier comes with a lantern and rakes among the refuse, and picks from it bones, rags or whatever may have been thrown away by accident, or the carelessness of the servants. The offensive filth of their persons and their occupations makes them outcasts from other classes of workmen; they sleep amidst their collections of refuse, and they are idle during the day; they are like all men who live under such circumstances, prone to indulge in ardent spirits; being degraded and savage, they are ready to throw away their wretched lives on every occasion. There are nearly 2,000 of the chiffonniers alone in Paris, and they and the water carriers were conspicuous actors in the revolution of 1830. During the administration of Casimer Perrier, the householders had complained of the

inconvenient mode of cleansing the streets, by large heavy carts drawn by three horses, which, during their slow progress throughout the day, obstruct the public thoroughfares, and occasion great inconveniences, especially in the narrow streets.

"In the beginning of the year 1834, when the cholera broke out, the attention of the authorities was directed to sanitary measures, and the municipality decided that the cleansing of the streets should be done by contract, by a quick relay of carts of a similar and more convenient shape, drawn by single horses ; and in order to diminish the inconvenience of the presence of these improved vehicles, the contractor was allowed to collect one load for each of his carts on the over night, which would have led to a practice similar to that of London, where the dust carts take the refuse direct from the house without any deposit in the streets. But in this arrangement an important interest had been overlooked, the chiffonniers, who were said to have been aided by the owners and men belonging to the superseded vehicles, rose in revolt, attacked and drove away the conductors, broke to pieces the new carts, threw the fragments into the river, or made bonfires with them. Unfortunately, at that time, the cholera had broken out at Paris. The mobs of chiffonniers which collected on the following day were swollen by other crowds of ignorant, terrified and savage people, who were persuaded that the deaths from the strange plague were occasioned by poison. 'My agents,' says the then prefect of police, in an account of this revolt, 'could not be at all points at once to oppose the fury of those crowds of men with naked arms and haggard figures, and sinister looks, who are never seen on ordinary times, and who seemed on this day to have risen out of the earth. Wishing to judge myself of the foundation for the alarming reports that were brought to me, I went out alone and on foot. I had great difficulty in getting through these dense masses, scarcely covered with filthy rags; no description could convey their hideous aspect, or the sensation of terror which their hoarse and ferocious cries created. Although I am not easily moved, I at one time feared for the safety of Paris — of honest people and their property! In fact, the riot was one of the most dangerous that had been witnessed in that city, and it was not suppressed without great exertions and some loss of life. The anxieties which it occasioned to the Minister Casimer Perrier, and his disgust at the political use made of it, were considered to have contributed to his death. He was himself attacked with cholera, and died a few days after. Shortly before his death when expressing his disgust, he said to the prefect: 'My friend, we are harnessed to a vile carriage.' 'Truly so,' replied the prefect; 'and the ways are dreadfully dirty.' The material ways of the city continued as they were; the prefect seeing that the introduction of the new

carts became a motive to discontent and collision, took upon himself to set aside the contract with the contractor, who, he states, received no other compensation for his losses than a commission which he could not use, to collect the refuse during the day, and the chiffonniers continue to the present time (1842), in the exercise of their wretched vocation at the expense of the public health and cleanliness." "Conceiving it probable," Mr. Chadwick goes on to remark "that the amount of filth left by defective cleansing had its corresponding description of persons, I made inquiries of the Commissioners of the Metropolitan Police. From returns which they obtained from their superintendents it appears, that of the class of bone-pickers, mud-rakers, people living on the produce in mews, courts, yards and by-lanes insufficiently cleansed, 598 are known to the police. From an observation of the proportion of filthy children and adults who appear amidst refuse whenever there are new buildings and an unusual quantity of rubbish and from other circumstances, I believe that were the refuse of houses daily cast into the streets in London in the same manner as at Paris, London would soon have as large and as dangerous chiffonnier class. The degraded creatures are also found among the inmates of the workhouses, and the close identity of their habits with the chiffonniers of Paris, affords a strengthening proof of the similarity of population produced by similarity of circumstances."

The parallel of the circumstances which now obtains in New York with those above described, is too obvious for extended remark. The barrel-pickers and gutter-rakers of New York belong to the same class and are more numerous than the chiffonniers of Paris were in 1834. And the writer is assured by Superintendent of Police, George. W. Walling, Esq., that all which is here said of them in Paris and London, and of the "filthy children and adults who appear amidst refuse whenever there are new buildings and an unusual quantity of rubbish, and from other circumstances," corresponds with his observation of the the same classes in New York. The most depraved characters and the vilest criminals usually have their bringing up and their hiding places in the foul dens of disease and death—the ill-ventilated, over-crowded and undrained tenement houses; and the more foul and vile the place the more prone the thieves and tramps to have their hiding places therein.

In the winter of 1873–4 there was an attempt made in New York to organize a general bureau of charities, which enlisted the sympathy and active co-operation of some of the best observers in the community. The effort unfortunately fell through. At the Social Science Convention in June, 1874, the Rev. Dr. Hall was called upon to explain the objects and result of the undertaking. "It was," he said, "to ferret out impostors, and to make charity reach only those who were

in real need, a sort of clearing-house of charity. The great majority of the charitable institutions responded to the plans of the bureau, but there were a few which refused to co operate. No one could have walked the streets during the last winter without being struck with what is very humiliating, the observation that this city is rapidly traveling in the track of the worst capitals of Europe, in the direction of abundant street paupers. Many of them are of the fancy kind, made up for effect purely spectacular, intended to operate upon the generous sympathies of the people at the moment. Others are quasi beggars among the street musicians. When I think of the many poor girls and boys who are being trained in that way in this city, educated in the worst direction, I must anticipate a crop of the most abandoned women within the next few years. I find that one society, admirable in its principles and organization, whose operations extend over the whole city, states in its printed report, that there were 20,000 persons, impostors in this city, living by the misdirected charity of the city.

"We have the Commissioners of Charities and Correction to look after paupers and criminals — a most unfortunate grouping — who expend $1,250,000 per year.

"We have the Commissioners of Emigration to attend, with certain restrictions, to those who come to our shores, who expend over $600,000 per year. There is more than $1,750,000 per year. But take the 20,000 who are living by fraud and imposture. These people live very comfortably. It is very low to put their living at a dollar per day. That makes over $7,000,000 a year going into the hands of the most degraded and corrupting class in the community.

"What is our reward? These clever, cunning, degraded people despise and laugh at us, and think that our very christianity is something that only gets hold of people who are a little soft in the brain. Men have very much to unlearn, and then much to learn, before they will get courage to persevere, and then, though they may not accomplish all they desire, they bequeath a trust to their fellow-creatures for them to carry out." *

The average census of paupers and criminals under the department of public charities and correction for 1874, was 10,289, and the cost, $921,940.

It is inconsistent with the experiences of human progress that evils so much at war with the well-being of mankind should continue to exist among a civilized people. To merely lay them bare, were it the first time, the writer would fain believe should be an effectual step toward their abatement. But, alas, he is persuaded by previous efforts of the same kind, that the hearts of the tenement-house landlords of

* Journal of *Social Science*, No. VI, p, 85.

New York are "desperately wicked," and they will not let them go. Avarice has so hardened the consciences of these landlords, as to render them incapable of perceiving their responsibility for the 9,000 lives they annually destroy, the standing army of over 10,000 paupers and criminals they annually recruit, the more than 20,000 thieves, tramps and murderers they shelter, or the more than $13,000,000 annual tax they impose on the public for their maintenance!

Such evils cannot continue to exist without poisoning the multitude; *their destruction* or retrogression of civilization is inevitable.

Selfishness and barbarism are noxious agents everywhere, and as such they should be treated. Cleanliness and refinement bear the same relation to each other in the progress of human culture, as do filth and moral uncleanness in the degradation of uncivilized communities. And the highest state of human culture furnishes the only standard by which the degree of elevation should be measured. To apply such measures for the preservation of life and morals, as will protect mankind at large from the injuries which narrow-minded and selfish individuals would inflict, is, therefore, the first and most sacred duty of good government. But no effort to this end can be applied to the continued tolerance of the tenement-house system of New York; they are wholly unadaptable to one another, the one bids defiance to the other. Good health, good morals, freedom from pauperism and vice, are unattainable in over-crowded, unventilated, badly-drained domiciles.

Public economy and humanity alike demand that the abominable system shall cease; that these prolific sources of filth, disease, pauperism, vice and crime *shall be destroyed.* To this end many areas of ground now covered by tenement houses should be cleared of the structures which occupy them, and converted into public squares covered with turf and trees; turned into breathing places for the dense population which will continue to surround them.

The pecuniary cost of such a conversion would be speedily met by the conservation of the amount now annually incurred in the maintenance of evils otherwise unavoidable. Laws should be passed against over-crowding, requiring and directing that all tenement houses so situated and conditioned in regard to structure and neighborhood, as to be obstacles to the promotion of public health, be removed, and the sites possessed by the city. Those not so situated should be placed under restraints in regard to capacity, fitting and accommodation. Such a law would not by any means be without precedent.

In the progress of sanitary reform in England, such laws have been applied to most of her large cities, and by them thousands of lives saved, immorality and vice lessened, public and private wealth increased.

Glasgow, for example, a few years ago, comprehended conditions

similar to those which now obtain in New York. In 1865, a portion of Glasgow, covering an area of about 88 acres in the center of the city, where a population of 51,304 was packed together at the average rate of 583 persons to the acre, in upwards of 10,000 houses, the walls of which were permeated with disease. The population of the whole city in 1865 was 423,723, so that fully 12 per cent occupied houses in every sense of the word unfit for human habitation, rapidly spreading moral and physical deterioration. The death-rate over the whole city was, as might be expected, 32.8 to the 1,000, which increased in 1869 to 34 to the 1,000, and the average death-rate of the 88 acres, specially alluded to was 38.64 to the 1,000. These figures still, however, fail to convey an adequate idea of the rapidly increasing over-density. In 1866, the town council obtained an "Act of Parliament (which was renewed in the year 1871), enabling the lord provost, magistrates and council of the city to take lands and houses compulsorily, to erect new buildings and dispose of the same; to erect and maintain houses specially adapted for the working classes, to borrow for these purposes a maximum of one and a quarter millions sterling; to charge interest for the sum borrowed on the town rates, levying an annual rate for the purpose of the act, not exceeding 6d in the pound."

The improvement scheme comprised 40 acres, in the worst of which, and in portions of the others, the population was housed at the rate of 1,000 to the acre, or 640,000 to the square mile. In these plague spots and fever dens the death rate was as high as 52.21 to the 1,000 in 1865. In 1870, before demolition commenced, it rose to 70 in the 1,000. Plans were prepared showing the properties to be taken, and parliamentary notices, in the usual form, were served on all the heritable proprietors, whose property was needed, none of whom opposed the bill. The value of the property scheduled was upwards of £1,500,000, and the preamble of the act narrates:

"Whereas, various portions of the city of Glasgow are so built, and the buildings thereon so densely inhabited as to be highly injurious to the moral and physical welfare of the inhabitants, and many of the thoroughfares are narrow, circuitous, and inconvenient, and it would be of public and local advantage if various houses and buildings were taken down, and those portions of the said city reconstructed, and new streets were constructed in and through various parts of the said city, and several of the existing streets altered and widened, and diverted, and that in connection with the reconstruction of these portions of the city provision was made for dwellings for the laboring classes who may be displaced in consequence thereof."

The operations, when completed, involved the purchase and demolition of upwards of 10,000 houses, which no structural alterations,

however extensive, could make healthful residences; the gradual removal and spreading of the population resident there, the laying off the ground in open spaces, and formation of 40 new streets to be cut through the center of the districts, removing unsanitary evils and affording commercial facilities, and the resale of the surplus lands for the erection of modern buildings, subject to the conditions, provisions and restrictions of the act.

The intricate net-work of houses then existing, now partially broken up, consisted of miles of alleys, or "closes," as they are termed in Scotland, not more than three or four feet wide, with lofty dark tenements on each side, forming a series of communicating fortresses, from which the criminal classes sallied with comparative impunity at night to ply their nefarious practices, having at hand facilities of escape and refuge. So much was this the case, that in 1867 the crimes reported to the police rose to the highest point ever attained, and were of a more serious character than at any previous time in the history of the city, and were rapidly increasing. The diminution of crime in subsequent years is largely due to the clearances made, which gave the police control and supervision over the criminal classes, as will be shown by the following table, keeping in view that the demolition of houses was trifling in 1868 and 1869, and that it was 1870 before this act was carried out to any extent.

The following extract from the official criminal returns, shows the number of crimes reported to the police as having been committed in the city of Glasgow during the years 1867, 1868, 1869, 1870, 1871, 1872 and 1873; also the number of persons apprehended and convicted for the same:

YEAR.	Total crimes reported.	Total apprehensions.	Percentage.	Total convictions.	Percentage.
1867	10,899	5,042	46.2	2,975	27.2
1868	10,594	4,726	44.6	2,996	28.2
1869	9,394	5,228	55.6	3,122	33.4
1870	8,702	5,077	58.3	3,000	34.1
1871	7,521	5,046	67.0	2,872	38.2
1872	7,946	5,287	66.5	3,128	39.3
1873	7,869	5,791	73.7	3,526	44.8

Taking the highest and lowest for comparison, to bring out the result:

YEAR.	Crimes reported.	Apprehensions.	Percentage.	Convictions.	Percentage.
1867.....	10,899	5,042	46.2	2,975	27.2
1873.....	7,869	5,791	73.7	3,526	44.8
	3,030*	749†		551‡	

The population in 1867 was 440,979, and in 1873, 498,462, so that the crimes reported in ordinary circumstances would have increased instead of diminished. The following extract from the official criminal returns shows the number of thefts reported to the police as having been committed within the city of Glasgow, by prostitutes or in brothels, during the years 1867, 1868, 1869, 1870, 1871, 1872 and 1873:

1867.....	1,192
1868.....	1,246
1869.....	1,146
1870.....	807
1871.....	458
1872.....	227
1873.....	264

Or, in other words, in this class of crime, instead of 1,192 cases in 1867, there were reported in 1873 only 264, showing a diminution of this class of offense of 928 cases in seven years.

Captain M'Call says, in his official criminal returns for the year ending December 31, 1871: "I would consider I fell short of my duty in this report were I not to acknowledge that the operations of the City Improvement Trustees, and the Directors of the City Union Railway have contributed to the results. Through these operations the city has been cleared of the foulest dens of crime and profligacy, and their occupants been scattered amongst a population breathing a purer moral atmosphere, thereby affording facilities to the police for bringing the vicious to justice more easily and certainly than when the whole formed a concentrated and combined colony of ruffianism.

Three thousand and eighty-five houses have been demolished, displacing an estimated population of 15,425 to provide for which and

* Less cases of crimes reported. † More apprehensions. ‡ More convictions.

the natural growth of the city, 26,794 houses have been erected within the municipal boundaries, under the provisions, conditions, and restrictions of the 'Glasgow Police Act,' under the authority of the Dean of Guild Court, from June 19, 1866, to August 31, 1874, which are estimated to accommodate 133,970. This does not include the numerous buildings in the immediate outskirts of the city."*

With regard to the cost of such improvements, if applied to New York, they would of course be gradually carried out, and would not therefore involve a large assessment at any one time; possibly no increase whatever, if judiciously managed. The process of evacuation might well be made to precede the process of demolition, contemporaneously with the erection of improved dwellings and improved facilities for access; or, which would be highly probable, promptly anticipated by private enterprise in view of the certain executions of such a law by installments, as it were, at stated times—requiring as in the example cited certain houses, or certain areas to be vacated on or before given dates.

The general principles of associations, societies and organizations under both government and voluntary efforts for the improvement of dwellings for the laboring classes which have been in progress in England for more than twenty years are so well known that an extended notice of them in this connection would be superfluous. It will suffice the purpose of this paper to notice the results.

From a paper in the journal of the Statistical Society of London, for March last, by Charles Gatliffe, Esq., F. S. S., on Improved Dwellings, etc., we learn that of 6,838 improved dwellings, capable of containing a population of 32,435 at a cost of about £1,209,359, in the vicinity of London, the death rate is considerably smaller than that of London or of the rural districts of England. For five years ending with 1871 the death rate in the Model Lodging Houses was 16.4 per 1,000; England, 21.4; London, 23.6 per 1,000. Children under ten years of age, the ratio in the model houses was 24 per 1,000 against 48 per 1,000 for London.

They have been equally efficacious for the suppression of crime, the vicious classes finding in them no shelter.

Any plan or law for the erection of such houses in the precincts of New York should be particularly stringent in regard to ground area, as well as house accommodation and other sanitary requirements, and executed under duly authorized and competent supervision.

The only approximation to the English system in this country is the one known as the co-operative association of Philadelphia, a concise

* Abstract of a paper entitled—Working Men's Dwellings—In what way can healthy workingmen's dwellings be erected in lieu of those removed for carrying out sanitary or municipal improvements or for other purposes? By James Morrison, Chairman of the Committee of Management of the Glasgow Improvement Trust — *Transactions of the National Association for the Promotion of Social Science.*—1874, Glasgow.

description of which as been recently published by Dr. Stephen Smith of New York.*

But it may be safely stated that no mere voluntary association can be relied upon for New York. The tenement-house interest is so large and the portion of the population living in tenement houses is so numerous and so hemmed in, that nothing short of a law of ejectment with provision for the destruction of the buildings, *compelling* the tenants to seek other quarters, and thus creating a demand for improved dwellings, will effect the purpose. With such a law comprehending municipal possession and limitations of occupancy, there would not probably be any need of municipal building aid. Private enterprise would anticipate the demand. And, as in Glasgow, London and Liverpool, improved dwellings' companies would be remunerative; thousands of lives would be saved annually, pauperism, vice and crime greatly lessened, and taxes proportionately reduced.

A law should be enacted: *To reduce, limit and govern the construction of dwelling-houses.* No dwelling-house, occupied by four or more families, should be permitted to stand, and no dwelling-house whatever should hereafter be erected, on the side of any street, which shall exceed in height the distance from the front of such building to the opposite side of such street, the measurement being taken from the level of the middle of such street immediately opposite said building.

Every building to be used as a dwelling-house, tenement house or school-house, should have in the rear or on the side or sides thereof, or partly in the rear and partly on the sides, at the least, one-fifth as much space, free from any erection thereon, as the ground space occupied by said building.

No habitable room in any dwelling house or tenement house should be allowed of less than eight feet in height in every part, from the floor to the ceiling, except rooms in the roof; and every habitable room in the roof of any such building, should be at least eight feet in height from the floor to the ceiling for not less than one-half the area of such room, and should average at the least eight feet from floor to ceiling throughout.

Every habitable room should have, at the least one window directly opening to the external air, and the total area of such window or windows, clear of frame and sash should be at the least one-tenth of the area of every such room, and the top of one such window at least, should not be less than seven feet six inches above the floor, and the upper half at the least, should be made to open the full width.

Every habitable room should be made to comprehend, at the least, 800 cubic feet of space for every individual occupant. Every dwelling-

* Methods of improving the houses of the laboring and tenement classes of New York *The Sanitarian*, vol 3, p. 148.

house and school building, and every room in any dwelling-house, tenement house and school building, or building used for a school, should be provided with open fire-place, or with special means of ventilation by air shaft or other means approved of by duly authorized sanitary authority.

Every dwelling-house, tenement house and school building should be drained in the most effectual manner; the situation, dimensions, material and construction of every water-closet, earth-closet, drain and cess-pool should be made subject to duly authorized sanitary survey and approval.

Lodging-houses should be subject to the same regulations and restrictions as tenement houses, in all respects, except space, but no room or space should be provided, let or occupied, which is less than 400 cubic feet capacity to every individual lodger, and no room of less than 800 cubic feet per occupant should be occupied for more than nine hours out of the twenty-four of any day.

No cellar or room, the floor of which is more than three feet below the level of the middle of the street immediately opposite, and no such room without a sub-cellar, should be occupied as a dwelling or sleep-room, and all such rooms occupied during the daytime for business purposes, should be required to conform to tenement house restrictions for window spaces and ventilation.

Every school-house, school-room or building used for school purposes should be required to conform to the same restrictions as dwelling-houses and tenement houses, excepting air space, but no school building, school-room or house, or room used for school purposes should be allowed, which does not provide, at the least, 400 cubic feet of air space for every teacher and pupil, and which is not provided with window opening to the external air, means of ventilation and drainage as herein before set forth in regard to dwelling-houses, tenement houses and habitable rooms, generally, subject to the approval of duly authorized sanitary authority.

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